

Atty. Dkt: P66610US0
Serial No.: 09/830,557

AMENDMENTS TO THE CLAIMS

This listing will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. - 129. (cancelled).

130. (withdrawn) A method for the assessment of at least one parameter of particles in a liquid analyte material, comprising providing a device comprising a sample compartment comprising an exposing domain, an inlet through which a volume of a liquid sample representing the analyte material can be introduced, and a flow system comprising at least a channel allowing at least a portion of the volume of the liquid sample to flow within the device,

introducing a volume of the liquid sample in the device through the inlet of the disposable device, passing at least a portion of the volume of the liquid sample through the flow system of the into the exposing domain of the sample compartment,

arranging the device in relation to detection device comprising detection means for quantitatively detecting spatial image data and processing means for processing the detected image presentation

Atty. Dkt: P66610US0
Serial No.: 09/830,557

detecting electromagnetic signals from the sample in the exposing domain of the device in the detection device forming, in the detection device, a spatial image representation of the exposing domain, and

processing the detected image presentation obtaining the assessment of the at least one parameter.

131. (withdrawn) A method according to claim 130, wherein one or more reaction components initially loaded in a compartment or flow channel part of the flow system of the disposable device is added to at least a portion of the volume of the liquid sample representing the analyte material.

132. (withdrawn) A method according to claim 131, wherein the reaction components comprise one or more chemicals in solid form.

133. (withdrawn) A method according to claim 132, wherein the reaction components comprise one or more chemicals in solid form in combination with one or more solubilizing agents aiding the solubilization of the chemicals in the liquid sample.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

134. (withdrawn) A method according to claim 132, wherein at least one of the reaction components has been loaded in freeze-dried form.

135. (withdrawn) A method according to claim 130, wherein any longitudinal gradient present in the liquid sample in the flow system is substantially reduced by passing the liquid sample through a part of a flow channel of the flow system of the device having a shape and/or size resulting in substantially reduction of longitudinal gradients in liquids passing there through.

136. (withdrawn) A method according to claim 130, wherein the part of the flow channel has at least one bend or obstruction resulting in substantially turbulent flow in the liquid passing the bend or obstruction.

137. (withdrawn) A method according to claim 130, wherein the velocity of the flow into, within, or out of the device is regulated by means of one or more regulating means constituting part of the flow system, wherein the flow regulating means

Atty. Dkt: P66610US0
Serial No.: 09/830,557

comprise means selected from stop valves, one way valves, and pressure and/or speed reduction valves.

138. (withdrawn) A method according to claim 130, wherein one or more operations selected from the group consisting of filtration, concentration and magnetic attraction is/are performed, the device comprising the means for performing such operation or operations.

139. (withdrawn) A method according to claim 130, wherein the detection of the spatial image representation is performed by means of an array of active detection elements onto which array the spatial image presentation is exposed.

140. (withdrawn) A method according to claim 130, wherein the signal which is detected by detection device substantially originates from one or several types of molecules of types which bind to, are retained within, or interact with, the particles, such molecules being added to the sample before or during exposure of electromagnetic signals, the molecules being molecules giving rise to one or several of the following phenomena: attenuation of electromagnetic radiation, photoluminescence when illuminated with

Atty. Dkt: P66610US0
Serial No.: 09/830,557

electromagnetic radiation, scatter of electromagnetic radiation,
Raman scatter.

141. (withdrawn) A method according to claim 131, one or more reaction components initially loaded in a compartment or flow channel part of the flow system of the device is one or more nucleic acid dyes and/or one or more potentiometric membrane dyes.

142. (withdrawn) A method according to claim 141, wherein one or more nucleic acid dyes is/are selected from the group consisting of: phenanthridines (e.g. ethidium bromide CAS#: 1239-45-8, propidium iodide CAS#: 25535-16-4), acridine dyes (e.g. acridine orange CAS#: 65-61-2 ICAS#: 10127-02-3), cyanine dyes (e.g. TOTOTM-1 iodide CAS#: 143 413-84-7 -Molecular Probes, YOPROTM-1 iodide CAS#: 152 068-09-2 -Molecular Probes), indoles and imidazoles (e.g. Hoechst 33258 CAS#: 023 491-45-4, Hoechst 33342 CAS#: 023 491-52-3, DAPI CAS#: 28718-90-3, DIPI (4?,6-(diimidazolin-2-yl)-2-phenylindole)).

143. (withdrawn) A method according to claim 141, wherein the nucleic acid dye added is propidium iodide CAS#: 25535-16-4.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

144. (withdrawn) A method according to claim 130, wherein particle being assessed is a result of one or several reaction(s) between one or more antibodies and one or more antigens.

145. (withdrawn) A method according to claim 130, wherein the assessment of particles is carried out substantially simultaneously with the determination of the amount and/or the level of any constituent in said sample material, the constituent being determined being, e.g., one or several of: fat, protein, lactose, urea, citric acid, glucose, ketones, carbon dioxide, oxygen, pH, potassium, calcium, sodium.

146. (withdrawn) A method according to claim 145, wherein the determination of any chemical property is based on spectrophotometric measurement, the spectrophotometric measurement being, e.g., one or several of; mid-infrared attenuation, near-infrared attenuation, visible attenuation, ultra-violet attenuation, photoluminescence, raman scatter, nuclear magnetic resonance.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

147. (withdrawn) A method according to claim 130, wherein the interior of the sample compartment has an average thickness of between 20 μm and 2000 μm , preferably between 20 μm and 1000 μm , more preferably between 20 μm and 200 μm .

148. (withdrawn) A method according to claim 130, wherein sample compartment has dimensions, in a direction substantially parallel to an exposing window, in the range between 1 mm by 1 mm and 10 mm by 10 mm.

149. (withdrawn) A method according to claim 130, wherein the volume of the liquid sample from which electromagnetic radiation is exposed, is in the range between 0.01 μl and 20 μl , more preferably between 0.04 μl and 4 μl .

150. (withdrawn) A system for the assessment of at least one parameter of particles in a liquid analyte material, comprising a device comprising a sample compartment comprising an exposing domain, an inlet through which a volume of a liquid sample representing the analyte material can be introduced, and a flow

Atty. Dkt: P66610US0
Serial No.: 09/830,557

system comprising at least a channel allowing at least a portion of the volume of the liquid sample to flow within the device,

• a detection device comprising detection means for
quantitatively detecting spatial image data and processing means
for processing the detected image presentation, the device and the
detection device having means for arranging the device in relation
to the detection device in a manner allowing electromagnetic
signals from a sample in the exposing domain of the device to pass
to the detection device and to form, in the detection device, a
spatial image representation of the exposing domain.

151. (withdrawn) A system according to claim 150, wherein the flow system additionally comprises a compartment or a flow channel part in or from which at least part of one or more reaction components initially loaded in the compartment or flow channel part is added to at least a portion of the volume of the liquid sample representing the analyte material, preferably wherein at least one of the reaction components loaded into the compartment or flow channel is in solid form.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

152. (withdrawn) A system according to claim 151, wherein the reaction components comprise one or more chemicals in solid form in combination with one or more solubilizing agents aiding the solubilization of the chemicals in the liquid sample.

153. (withdrawn) A system according to claim 150, wherein the part of the flow channel provides substantial laminar flow therethrough and/or comprises one or more mixing chambers.

154. (withdrawn) A system according to claim 150, wherein at least a part of a flow channel of the device has such a shape and/or size that passage of the liquid sample through it will substantially reduce any radial gradient present in the liquid sample, the part of the flow channel having at least one bend or obstruction resulting in substantially turbulent flow in liquid passing the bend or obstruction.

155. (withdrawn) A system according to claim 150, wherein the flow system comprises velocity regulating means selected from stop valves, one way valves, and pressure and/or speed reduction valves.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

156. (withdrawn) A system according to claim 150, wherein the device comprises means for performing one or more operations on the liquid sample, the operations being selected from the group consisting of filtration, concentration and magnetic attraction.

157. (withdrawn) A system according to claim 151, wherein one or more reaction components initially loaded in a compartment or flow channel part of the flow system of the device is one or more nucleic acid dyes and/or one or more potentiometric membrane dyes in an amount of 0.3-30 μg per ml of the sample.

158. (withdrawn) A system according to claim 150, wherein the determination of a chemical property of the sample is based on spectrophotometric measurement, the spectrophotometric measurement being, e.g., one or several of; mid-infrared attenuation, near-infrared attenuation, visible attenuation, ultra-violet attenuation, photoluminescence, Raman scatter, nuclear magnetic resonance.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

159. (withdrawn) A system according to claim 150, wherein the determination of any chemical property is based on potentiometric measurement, preferably by the use of ion selective electrode.

160. (withdrawn) A system according to claim 150, wherein the interior of the sample compartment has an average thickness of between 20 μm and 2000 μm , preferably between 20 μm and 1000 μm , more preferably between 20 μm and 200 μm .

161. (withdrawn) A system according to claim 150, wherein sample compartment has dimensions, in a direction substantially parallel to an exposing window, in the range between 1 mm by 1 mm and 10 mm by 10 mm.

162. (withdrawn) A system according to claim 150, wherein the volume of the liquid sample from which electromagnetic radiation is exposed, is in the range between 0.01 μl and 20 μl , preferably between 0.04 μl and 4 μl .

163. (Previously presented) A device adapted to be used in a system for the assessment of at least one parameter of particles

Atty. Dkt: P66610US0
Serial No.: 09/830,557

in a liquid analyte material, the a device comprising

a sample compartment comprising an exposing domain, said exposing domain allowing electromagnetic signals from a sample in the exposing domain to pass to a detection device and to form, in the detection device, a spatial image representation of the exposing domain processable by processing means of the detection device,

an inlet through which a volume of a liquid sample representing the analyte material can be introduced,

a flow system comprising at least a channel allowing at least a portion of the volume of the liquid sample to flow within the device,

means for arranging the device in relation to the detection device, the device having no sample outlet.

164. (Previously presented) A device according to claim 163, wherein the flow system additionally comprises a compartment or a flow channel part in which or from which at least part of one or more reaction components initially loaded in the compartment or flow channel part is added to at least a portion of the volume of the liquid sample representing the analyte material.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

165. (Previously presented) A device according to claim 164, wherein at least one of the reaction components is in freeze-dried form.

166. (Previously presented) A device according to claim 163, wherein part of the channel provides laminar flow in the liquid sample.

167. (Previously presented) A device according to claim 163, wherein part of the channel has at least one bend or obstruction resulting in turbulent flow in liquid passing the bend or obstruction.

168. (Currently amended) A device according to claim 163, wherein the flow system comprises one or more means for regulating the velocity of the flow into, or within, ~~or out of~~ the device, the velocity regulating means comprising means selected from the group consisting of: stop valves, one way valves, pressure valves and speed reduction valves.

Atty. Dkt: P66610US0
Serial No.: 09/830,557

169. (Previously presented) A device according to claim 163, wherein the device comprises means for performing one or more operations on the liquid sample, the operations being selected from the group consisting of filtration, concentration and magnetic attraction.

170. (Previously presented) A device according to claim 163, containing one or more compartment(s) or domain which allows spectrophotometric measurement for the determination of any chemical property, the spectrophotometric measurement being selected from the group consisting of: mid-infrared attenuation, near-infrared attenuation, visible attenuation, ultra-violet attenuation, photoluminescence, raman scatter, and nuclear magnetic resonance.

171. (Previously presented) A device according to claim 163, wherein the interior of the sample compartment has an average depth of between 20 μm and 2000 μm .

172. (Previously presented) A device according to claim 163, wherein sample compartment has dimensions, in a plane parallel to

Atty. Dkt: P66610US0
Serial No.: 09/830,557

an exposing window, in the range between 1 mm by 1 mm and 10 mm by 10 mm.

173. (Previously presented) A device according to claim 163, wherein the volume of the sample compartment from which electromagnetic radiation is exposed, is in the range between 0.01 μ l and 20 μ l

174. (previously presented) A device according to claim 163, wherein the flow system comprises one or more mixing chambers.

175. (previously presented) A device according to claim 163, wherein the interior of the sample compartment has an average depth of between 20 μ m and 1000 μ m.

176. (previously presented) A device according to claim 163, wherein the interior of the sample compartment has an average depth of between 20 μ m and 200 μ m.

177. (previously presented) A device according to claim 163, wherein the volume of the sample compartment from which

Atty. Dkt: P66610US0
Serial No.: 09/830,557

electromagnetic radiation is exposed, is in the range between 0.04 μ l and 4 μ l.

178. (previously presented) A device according to claim 163, wherein the device comprises a propelling means.